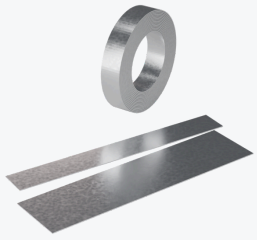
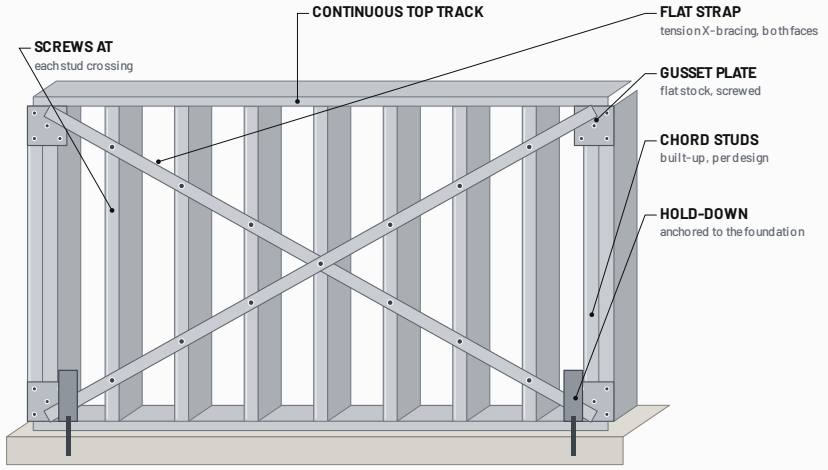
# FLAT STOCK · FLAT STRAP

Galvanized flat steel for strap bracing, bridging, X-bracing and custom work · 18 to 97 mil



FLAT STOCK
**Flat lengths and coil, galvanized**




PRODUCT 24 · CUSTOM STEEL PROFILES

Saturn Metal flat stock, also called **flat strap** or **flat strip**, is flat galvanized steel in the width and thickness the job needs. In steel framing it is the **horizontal strap bracing** on wall studs, the **strap bridging** under floor joists and the **tension X-bracing** of shear walls. It is also cut into backing, gusset and splice plates and closures. Widths **up to 48"**, thickness **18 to 97 mil (25 to 12 ga)**, in **10' lengths, up to 12'**, or in coil.

- Any width to 48", cut to order
- 18 to 97 mil, to match the framing
- Flat lengths of 10' and up to 12', or coil
- Galvanized steel for corrosion protection

| FORM | LENGTHS | WIDTHS | THICKNESS | GAUGE | STEEL |
|---|---|---|---|---|---|
| Flat lengths · coil | 10' · up to 12' | Up to 48" | 18–97 mil | 25–12 ga | Galvanized |

## 1 FOUR NAMES, ONE PRODUCT

**Flat stock**
Our product name: flat galvanized steel, cut to the width and length you order.

**Flat strap**
The name on framing drawings for narrow flat stock used as bracing.

**Flat strip**
Another site name for the same narrow flat steel.

**Strapping**
The general name when it comes off a coil and is cut on site.

## 2 WHAT YOU ORDER

1. **Width.** any width up to 48", narrow straps to wide plates
2. **Thickness.** 18 to 97 mil, the same steel as the framing
3. **Length.** 10' flat lengths, up to 12', or a coil
4. **Galvanized steel.** zinc-coated for corrosion protection

| BRACING | X-BRACING | ANY WIDTH | COIL OR FLAT |
|---|---|---|---|
| Studs and joists | Shear walls | Up to 48" | 10' to 12' lengths |


**+1 (416) 746-8000** · Sales@SaturnMetal.ca · www.SaturnMetal.ca

# SIZES & SPECIFICATIONS

Thicknesses, widths, weights and how to order

## 3 THICKNESSES AND WIDTHS

**THICKNESS · SECTION ENLARGED 4×**




Design thickness, inches

**WIDTHS · EXAMPLES TO SCALE**




**Any width to 48", cut to order**

## 4 SPECIFICATIONS

| | |
|---|---|
| PRODUCT | Flat galvanized steel: strap, strip or plate |
| WIDTHS | Up to 48", cut to order |
| THICKNESS | 18 mil (25 ga) to 97 mil (12 ga) |
| LENGTHS | Flat lengths of 10', up to 12'; or coil |
| STEEL | Galvanized steel sheet, ASTM A653 / A1003 |
| DESIGN | CSA S136 for cold-formed steel |

## 5 ORDERING

**How to order**

Give the width, the thickness in mil or gauge, flat lengths or coil, the length and the quantity. For bracing, quote the strap size on the structural drawings.

**Match the framing**

Use the strap width and thickness the design shows. Where none is shown, ask the designer; do not size bracing straps by eye.

## 6 WEIGHT PER LINEAR FOOT (LB/FT)

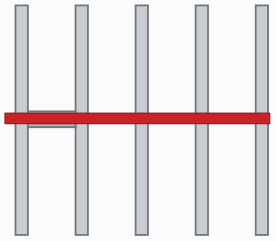
| THICKNESS | 1-1/2" | 2" | 3" | 4" | 6" |
|---|---|---|---|---|---|
| **18 mil** · 25 ga | 0.10 | 0.13 | 0.19 | 0.26 | 0.38 |
| **33 mil** · 20 ga | 0.18 | 0.24 | 0.35 | 0.47 | 0.71 |
| **43 mil** · 18 ga | 0.23 | 0.31 | 0.46 | 0.61 | 0.92 |
| **54 mil** · 16 ga | 0.29 | 0.39 | 0.58 | 0.77 | 1.16 |
| **68 mil** · 14 ga | 0.36 | 0.49 | 0.73 | 0.97 | 1.46 |
| **97 mil** · 12 ga | 0.52 | 0.69 | 1.04 | 1.38 | 2.08 |

Calculated from width × design thickness × steel density; zinc coating not included. A 10' length weighs ten times the value shown.

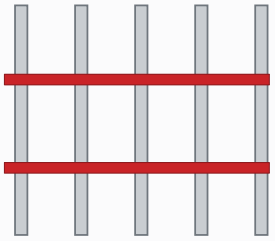
# WHERE IT GOES · STUD BRACING

Four common uses, and horizontal strap bracing of wall studs

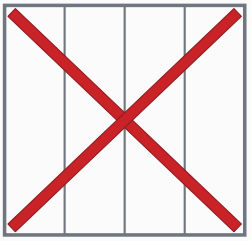
## 7 WHERE IT GOES



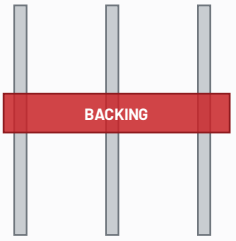
**STUD BRACING**
horizontal strap on the flanges



**JOIST BRIDGING**
strap across the bottom flanges



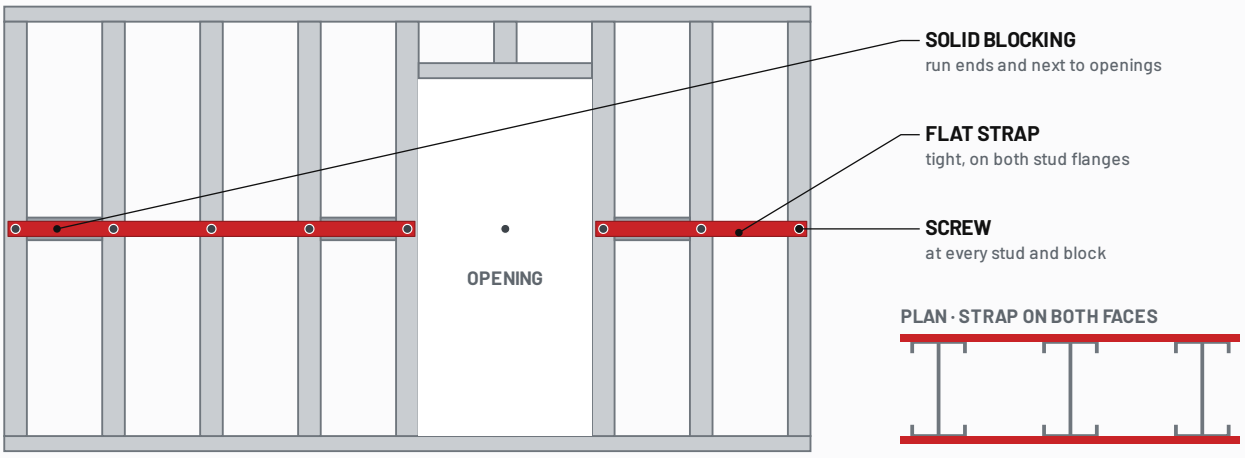
**SHEAR WALL X-BRACING**
tension straps, corner to corner




**BACKING & CUSTOM**
backing, splice plates, closures

SKETCHES · RED = FLAT STOCK

## 8 HORIZONTAL STRAP BRACING FOR WALL STUDS




ELEVATION

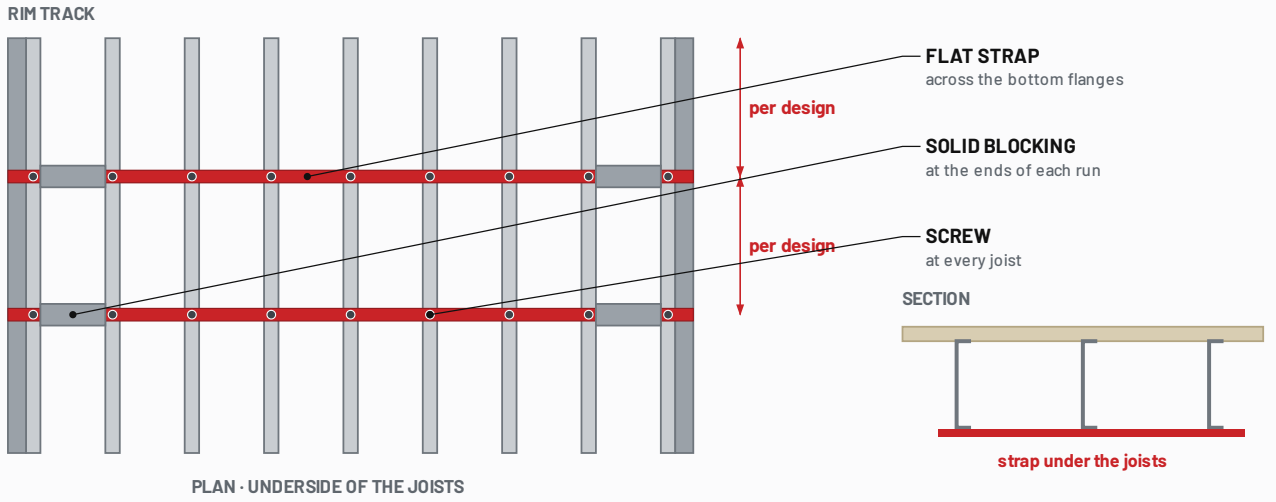
Strap bracing holds the studs in line so they do not twist or buckle sideways under load. A **flat strap** runs along the wall on **both stud flanges**, at the heights the design sets, and is screwed to every stud.

The strap is anchored to **solid blocking**: short stud or track pieces fixed between two studs at **each end of the run**, **next to openings** and at the intervals the design shows. A strap with nothing solid to pull against does not brace the wall.

# JOIST BRIDGING & X-BRACING

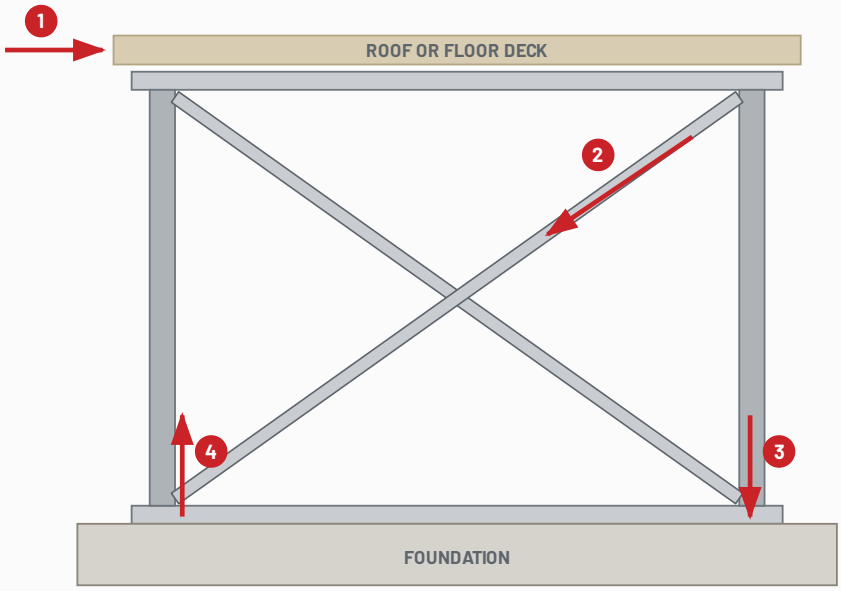
Strap bridging under joists, and how an X-braced wall carries load

## 9 STRAP BRIDGING FOR FLOOR JOISTS




Straps run across the **bottom flanges** of the joists, square to them, with solid blocking at the ends of each run. The number of rows and their spacing come from the joist design. Where the subfloor does not brace the top flanges, strap the top flanges too. Install bridging as soon as the joists are set and **before** construction loads go on the floor.

## 10 TENSION X-BRACING FOR SHEAR WALLS




1. **Lateral load enters the deck**
   wind or seismic, into the roof or floor
2. **The deck delivers it to the wall**
   through the top track; a strap takes it in tension
3. **The far chord pushes down**
   compression into the foundation
4. **The near chord pulls up**
   resisted by the hold-down and anchor

Diagonal straps run corner to corner on **both faces** of the wall, fixed to the chord studs directly or through **gusset plates**. Under lateral load one diagonal works in tension. The chord studs at each end carry the uplift and compression, so each is **anchored to the foundation** with a hold-down sized for the load.

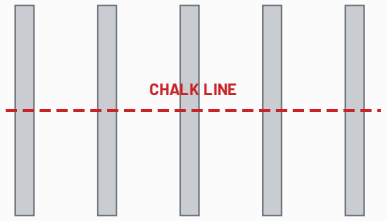
**Complete the load path.** The straps work only when every link carries the load: deck to wall, strap to chords, chords to anchors, anchors to the foundation. Keep the top track continuous across a braced panel, and add the blocking, splices, drag struts and anchors the design shows.

# INSTALLATION, STEP BY STEP

Lay out, block, cut, fix, fasten and splice

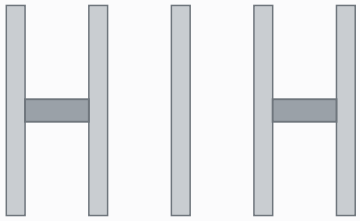
## 11 SIX STEPS TO A STRAP RUN

### 1 Lay out



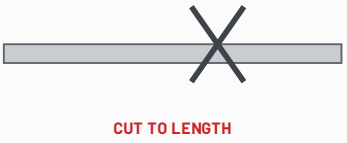

Snap a line across the studs or joists at each strap row the design shows, on both faces where required.

### 2 Block



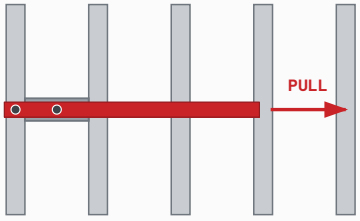
Fix solid blocking between the studs or joists at the ends of each run, next to openings and at the intervals shown.

### 3 Cut to length



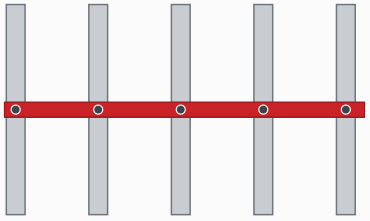

Cut the strap with snips, a shear or an abrasive saw; for X-bracing measure corner to corner. Deburr cut ends.

### 4 Fix one end



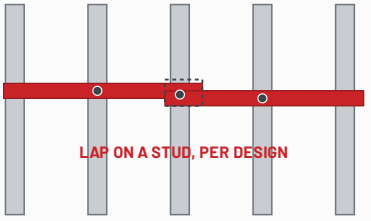

Screw the strap to the first block or gusset plate with the fasteners shown, then pull it tight along the line.

### 5 Screw at every member



Keep the strap tight and straight and screw it to every stud or joist and every block it crosses.

### 6 Laps and splices




Where a run is longer than one piece, lap or splice the strap over a stud or block as the design details.

**Sharp edges.** Cut ends and coil ends are sharp, and coils can spring open. Put on gloves and eye protection, and keep coils banded until you unwind them.

## 12 TROUBLESHOOTING

| YOU SEE | LIKELY CAUSE | FIX |
|---|---|---|
| Strap slack or bowed | Not pulled tight before screwing | Remove screws, pull tight, re-fasten |
| Studs still twist | No blocking at the run ends | Add solid blocking and fasten the strap to it |
| X-brace strap loose | Strap not tight, or chord anchor missing | Tighten the strap; check hold-downs and anchors |
| Board bulges at a strap | Thick strap or lap under the board | Use the specified thickness; keep laps at blocks |


**+1 (416) 746-8000** · Sales@SaturnMetal.ca · www.SaturnMetal.ca

# QUESTIONS, SPECIFYING & NOTICE

Common questions, section areas, standards and a specification guide

## 13 COMMON QUESTIONS

**Coil or flat lengths?**
Flat lengths of 10', up to 12', for bracing and plates; coil for long runs cut on site.

**Which strap for stud bracing?**
The width and thickness on the structural drawings. 2" wide straps are common; the design decides.

**Do I need blocking?**
Yes. Strap bracing needs solid blocking at the ends of each run and next to openings to pull against.

**Is it galvanized?**
Yes. Typical coatings are G40 for 18 mil and G60 for 33 mil and up; confirm with your order.

## 14 SECTION AREA FOR DESIGN (IN²)

| THICKNESS | DESIGN T | COATING | YIELD | 1-1/2" | 2" | 3" |
|---|---|---|---|---|---|---|
| **18 mil** | 0.0188" | G40 | 33 ksi | 0.028 | 0.038 | 0.056 |
| **33 mil** | 0.0346" | G60 | 33 ksi | 0.052 | 0.069 | 0.104 |
| **43 mil** | 0.0451" | G60 | 33 ksi | 0.068 | 0.090 | 0.135 |
| **54 mil** | 0.0566" | G60 | 50 ksi | 0.085 | 0.113 | 0.170 |
| **68 mil** | 0.0713" | G60 | 50 ksi | 0.107 | 0.143 | 0.214 |
| **97 mil** | 0.1017" | G60 | 50 ksi | 0.153 | 0.203 | 0.305 |

Gross area = width × design thickness. Typical coating and yield shown; capacity, net area at fasteners and connections are checked by the designer.

## 15 SPECIFICATION GUIDE

Flat strap: Saturn Metal galvanized flat stock, ASTM A653 / A1003, [width] × [thickness] mil, in flat lengths or coil. Install strap bracing on both stud flanges at the rows shown, tight and fastened to every stud and to solid blocking at run ends, openings and intervals shown. Strap bridging and X-bracing, gusset plates, hold-downs and anchors as shown on the structural drawings, designed to CSA S136.

## 16 STANDARDS

| | |
|---|---|
| ASTM A653 | Steel sheet, zinc-coated (galvanized) by the hot-dip process |
| ASTM A1003 | Steel sheet for cold-formed framing members |
| CSA S136 | Design of cold-formed steel structural members |

**Related:** DS-02 load-bearing stud framing · DS-03 cold-formed joists · DS-04 track · DS-10 bridging channel · DS-21 clips & connectors · DS-25 Z-bar · DS-30 custom bent profiles

**Technical questions and quotes:** +1 (416) 746-8000 · Sales@SaturnMetal.ca · www.SaturnMetal.ca

**IMPORTANT NOTICE**

This data sheet gives general product information only. It is not engineering, design or installation advice. A qualified design professional must review every application, and the building code and project documents always govern. Strap size, spacing, blocking, fasteners, splices, gusset plates, hold-downs and anchors must come from the structural design. Drawings are schematic and not to scale unless noted; dimensions are nominal and subject to standard tolerances. Values marked typical, approximate or commonly specified are for reference only. Standards are referenced by name for identification; always use the edition required by the governing code. Saturn Metal may change products and information without notice; confirm current data before ordering or specifying. Warranties and remedies, if any, are only those in Saturn Metal's written terms of sale. Names of standards bodies belong to their owners. Saturn Metal is a metal products manufacturer and/or supplier; this sheet does not mean the product is manufactured by Saturn Metal. © Saturn Metal